Can you afford not to filter effectively and control contamination?

By Hydrasales

Most hydraulic systems generate contaminants with solid, liquid, and gaseous particles. These are either generated externally or internally through fluids, component corrosion or wear and tear, or reduced systems maintenance and housekeeping. Sytems become less efficient over time, and system breakdowns can be costly.

In challenging economic times, system maintenance is prone to be neglected and relegated as a low priority. Cost savings exercises are adopted. System engineers or procurement officers often quiz about the cost of contamination monitoring equipment or appropriate filtration equipment within their hydraulic system. Users seldom focus on time savings and the cost savings if an effective supervisory and maintenance regimen is adopted to control and manage contamination.

Let us examine a few points where investing and incorporating effective filtration and condition monitoring can help with system efficiencies and optimum performance.

Around seventy to ninety percent of hydraulic system breakdowns is attributed to particulate contamination.

That is, indeed, a high percentage. If a systems engineer can incorporate appropriate filtration and contamination control equipment to reduce this percentage by thirty to forty percent, he can achieve optimum system efficiencies.

Hydrasales sales engineer Chris Banks enjoys helping clients with filter sizing. He says, " Filter sizing with the MP Filtri software helps with filter sizing. Nothing is left to chance, allows simulation under different flows and pressures. The report computes pressure drops and maximizes the opportunity for proper filter selection."

What you may ask, "are the costs of such breakdowns?" The significant expense is system downtime, especially in production. Remember to add the cost of labour, the time to fault-find, and the cost to remove and replace the failed component. It can be a prohibitively costly exercise.
Components are continuously subject to contaminants before the actual component failure. A system, thus, loses component efficiency right from the time of commissioning. When new, a hydraulic system runs at full pressures and flow rates, the system loads and speeds and performs optimally. Over-time, contaminants will impact operating efficiencies and cause wear and cracks at critical component surface areas. The system will begin to lose the efficiency of the components and how well they perform. Sometimes the affected part within the system malfunctions due to the blocking of small orifices by large contaminates.

Typically, the tolerances are small, and engineers expect component clearances of 0.5 microns up to 50 microns. It doesn't take much dirt or obstacles to block an orifice within a hydraulic system. Any blockage will reduce and ultimately restrict flow within the system, impacting, stopping, or slowing down the hydraulic application.

How can we control this contamination problem and extend component life?

The first step is to incorporate effective filtration at the design stage of the system. Depending on the sophistication and needs for system outputs, the designer must consider including pressure, return, suction, and an offline filtration system to protect components.

They all do a job but are they the right filters for the application?

Take each hydraulic application into consideration to see how it will operate and perform; for example, how sensitive are the proposed components, proposed flows, working pressures, temperatures, environment critical the operation is. Hydrasales Lucas Thela cautions, "A word of caution on the approach to designing the system. The cheapest design may meet the minimum operating parameters. Without incorporating effective filtration to meet systems operating needs at peak pressures can become expensive."

His experience has made him adopt a pro-active approach to training in hydraulic filtration and accessories. He says, "There is a lack of understanding of the importance of filtration and contamination control! A basic understanding will certainly go a long way!"

Hydrasales provide full support on their product range and offer FREE training on filtration, contamination monitoring, and accessories. General manager Elvira Caripis emphasizes, " With technology, we can reach the remotest customers through online platforms. Internet access is all that is required."

She advised, " This will be beneficial for maintenance and field staff. Training will help participants troubleshoot on filter efficiency and performance." Email Hydrasales at harpo@hydrasale.co.za for any training requirements. Contamination in hydraulic oil can be monitored and controlled using several different methods. Often the quickest and most efficient way is through filtration or condition monitoring.

Lucas Thela adds, "As technology has improved, applications and their constituent components have become more sophisticated. It has resulted in creating better tolerances and more critical component clearances.
The fitting of a low-cost particle counter is a must in continually assessing the level of contamination within a hydraulic system."
Online particle monitors analyze systems 24/7 initiating internal and external alarms should the levels of contamination or moisture levels change. Protection is afforded to components and applications. It will ensure efficiency and reduces the high cost of breakdowns and unscheduled downtimes.

The benefits of online particle counting are:

- ✓ Saving money on the total cost of filtration eliminating unscheduled filter changes
- ✓ Constant system monitoring = predictive maintenance = cost savings
- ✓ Constant system monitoring = tracking system cleanliness = cost savings
- ✓ Prolonging significant component life due to predictive maintenance
- ✓ Save time – high-cost processes effectively monitored
- ✓ There is predictive control. It is a cost-effective and efficient method of system monitoring when system cleanliness levels are exceeded.

Hydrasales carries a full range of quality and time tested Hydraulic filters, filter elements and system accessories. Hydrasales institutional expertise and excellence has developed over fourty years of successfully serving the mining, engineering, construction and hydraulics industries.
Hydrasales represents MP Filtri, Faster Couplings and Badger Meters Hedland range of flow meters. These leading manufacturers meet international quality standards and products are certified to international standards. Hydrasales enjoy direct technical support from these leading brands and the support is key to application development and innovation in African markets.

Email harpo@hydrasale.co.za for your filtration, quick connect couplings, flow meters, pressure gauges, breathers, pressure switches and other accessories for your system needs. Alternately visit www.hydrasale.co.za .
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